2 feet higher than had ever before been known. Many homes were surrounded by water and the occupants compelled to abandon them. One residence was carried away. The transformer station, from which electric power for the city is distributed, was practically wrecked, and the city was left in darkness. About 65 feet of track was washed out on the Oregon Short Line Railroad near Ikom, above Pocatello, causing a complete stoppage of traffic on this road for more than three days. Hundreds of cars and almost a thousand passengers were held at Pocatello. Most of the wagon bridges on the Port Neuf were carried away or badly damaged. The river began to fall on February 4.

THE MINIDOKA IRRIGATION PROJECT.

By Hon. F. S. WEYMOUTH, Supervising Engineer, United States Reclamation Service.

The Minidoka irrigation project of the United States Reclamation Service covers an irrigable area of approximately 125,000 acres in Lincoln and Cassia Counties, Idaho, deriving its water supply from the Snake River by means of a rock-fill diversion dam located at a point 6 miles south of the Minidoka station on the Oregon Short Line Railroad.

The gravity portion of this project was constructed during the years 1905 to 1907, and was officially opened in the spring of 1907. From 1908 to the present time the pumping unit has been under construction. This latter unit has not yet been officially opened by the Secretary of the Interior, but water has been furnished during the season of 1910 on a rental basis to all settlers desiring it.

The character of the land lying on the north side of the river varies from sand to sandy loam and clay, underlain, at depths of from 100 to 200 feet, by lava rock. On the south side of the Snake River the soil is more nearly uniform, consisting of a finely disintegrated lava formation, with a gently rising slope southward from the river to the foothills of the Goose Creek Mountain Range. All the tract is free from rock and has proved very fertile, growing bountiful crops of staple products.

Under the existing plan all of the area lying on the north side of the river, within the limits of the project, is irrigated by a gravity system, which diverts water for 68,500 acres at the dam above mentioned, the diverting canal having a capacity of over 1,400 second-feet. This main canal is 13 miles long, and separates at its lower end into two great systems, each of which divides into smaller canals and laterals.

At the south-side head gates 850 second-feet are diverted into a canal which irrigates by gravity 7,500 acres in its length of 13 miles and which serves also as a feeder for the pumping tract, located beyond its lower end. Here three pumping stations, equipped with electrically driven centrifugal pumps and operated by power transmitted from the dam, raise water into three main canals, each of which is approximately 30 feet higher than the one below, making the greatest lift above the gravity canal about 90 feet. With the equipment as at present planned 500 second-feet of water passes through the first lift station, 375 second-feet through the second station, and 200 second-feet through the third, there being a total of 48,500 acres of irrigable land under this tract.

The farm units on the Minidoka project are 40 and 80 acres in area, and the duty of water is 60 to 100 acres to the second-foot, according to the character of the soil.

The tract lying on the north side of the river is now being provided with a drainage system, which will eventually serve all portions of the land requiring drainage.

The mean annual run-off of the Snake River at the Minidoka dam is about 6,000,000 acre-feet, the lowest on record being 3,800,000 acre-feet. During the years of low summer run-off the natural flow of the river during a portion of the irrigating season is not sufficient to supply the needs of the project, on account of prior rights below, and for that reason storage works have been provided to guard against any possible shortage due to a low stage of the river. These storage works make the project practically independent of the condition of the river during the irrigation season.

The Minidoka dam is of the rock-fill type, supplemented by an earth fill on the upstream side, and is 650 feet long, averaging about 50 feet in height. At its north end are located the heavy concrete head gates for the north-side canal system. A spillway of gravity concrete section, 2,400 feet long, extends across the river channel to the south bank, where it is flanked by the head-gate structure for the canal serving the lands lying on that side of the project. Adjoining the north-side head gates on the south is the power station, recently completed, which with its present equipment is capable of generating 9,000 horsepower, utilizing the head of water created by the dam as the source of energy. This head is approximately 46 feet, and power is generated by means of five turbine generators of the latest type. Power is furnished also for commercial purposes, heat, and light to the towns on the project at very reasonable rates. This power and pumping system constitutes the largest hydroelectric pumping plant for irrigation in the world.

Lake Walcott, formed by the diversion dam, is a very attractive body of water, 32 miles in length and from one-half to 3 miles wide. By means of the piers constructed on the crest of the spillway storage of about 55,000 acre-feet is effected in this lake for use during the low-water period of the river. This, however, is merely supplementary to the storage at Jackson Lake, Wyo., on the headwaters of the Snake River, where a concrete dam of reenforced type, now under construction, will impound nearly 400,000 acre-feet of water, thus providing for any possible contingency with reference to a shortage of supply. The construction of this dam will be sufficiently advanced by the season of 1911 to permit of sufficient storage for the project for that year.

There are at present three towns on the project, Rupert, Heyburn, and Burley, the two first named being Government town sites, and all bearing signs of activity and prosperity. The Minidoka & Southwestern branch of the Oregon Short Line Railroad passes through all these towns. Branch lines from Rupert to Bliss and from Burley to Oakley are under construction. With the exception of a comparatively small amount of State land, as yet unsold, practically all of the land under this project has been filed upon or is in private ownership, and the development of the tract during the present season has been very rapid, indicating that within a few years this section of the Snake River Valley will undoubtedly become a great agricultural center.